## Gunter, Jason

**From:** Nations, Mark <mnations@doerun.com>
**Sent:** Sunday, April 13, 2014 4:39 AM
**To:** Gunter, Jason
**Cc:** Yingling, Mark; Wohl, Matthew; robert.hinkson@dnr.mo.gov; brandon.wiles@dnr.mo.gov; Ty Morris (TMorris@barr.com)
**Subject:** BTE 1st Qtr
**Attachments:** 2013-07-31 BT AOC Pace Lab Report.pdf; 2013-10-10 BT AOC Pace Lab Report.pdf; BTE_1st_Qtr[1].doc

Jason, attached is the March 2014 report.

07CR 40454456 4.2
Superfund
0002

THE DOE RUN COMPANY

Remediation Group

**Mark Nations**
**Mining Properties Manager**
**mnations@doerun.com**

April 11, 2014

Mr. Jason Gunter
Remedial Project Manager
U.S. Environmental Protection Agency
Region 7 - Superfund Branch
11201 Renner Blvd.
Lenexa, KS 66219

**Re: The Doe Run Company – Bonne Terre Superfund Site Quarterly Progress Report**

Dear Mr. Gunter:

As required by Article VI, Section 56 of the Unilateral Administrative Order (UAO) (CERCLA-07-2005-0169) for the referenced project and on behalf of The Doe Run Company, the progress report for the period January 1, 2014 through March 31, 2014 is enclosed. If you have any questions or comments, please call me at 573-518-0800.

Sincerely,

Mark Nations
Mining Properties Manager

Enclosures
c: Mark Yingling – TDRC (electronic only)
Matt Wohl – TDRC (electronic only)
Robert Hinkson – MDNR
Brandon Wiles – MDNR
Ty Morris – Barr Engineering

**1221 Mill Street, Leadwood, MO 63653**
**Telephone: (573) 562-7793**

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

August 07, 2013

Amy Sanders
The Doe Run Company
P. O. Box 500
Viburnum, MO 65566

RE: Project: BONNE TERRE (QUARTERLY)
Pace Project No.: 60150137

Dear Amy Sanders:
Enclosed are the analytical results for sample(s) received by the laboratory on August 02, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jamie Church

jamie.church@pacelabs.com
Project Manager

Enclosures

**REPORT OF LABORATORY ANALYSIS**

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# CERTIFICATIONS

Project: BONNE TERRE (QUARTERLY)
Pace Project No.: 60150137

**Green Bay Certification IDs**
1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 11888
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
US Dept of Agriculture #: S-76505
Wisconsin Certification #: 405132750

**Kansas Certification IDs**
9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 13-012-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-13-4
Utah Certification #: KS000212013-3
Illinois Certification #: 003097



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## SAMPLE SUMMARY

Project: BONNE TERRE (QUARTERLY)
Pace Project No.: 60150137

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| 60150137001 | BTE 3RD QTR-2013 | Water | 07/31/13 20:19 | 08/02/13 06:10 |



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## SAMPLE ANALYTE COUNT

Project: BONNE TERRE (QUARTERLY)
Pace Project No.: 60150137

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| **60150137001** | **BTE 3RD QTR-2013** | EPA 200.7 | JGP | 6 | PASI-K |
| | | EPA 200.7 | JGP | 3 | PASI-K |
| | | SM 2540D | LEM | 1 | PASI-K |
| | | SM 2540F | LEM | 1 | PASI-K |
| | | SM 4500-H+B | JML | 1 | PASI-K |
| | | EPA 300.0 | OL | 1 | PASI-K |
| | | SM 5310C | TJJ | 1 | PASI-G |



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# ANALYTICAL RESULTS

Project: BONNE TERRE (QUARTERLY)
Pace Project No.: 60150137

**Sample: BTE 3RD QTR-2013** **Lab ID: 60150137001** Collected: 07/31/13 20:19 Received: 08/02/13 06:10 Matrix: Water

| Parameters | Results | Units | Report Limit | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **200.7 Metals, Total** | Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 | | | | | | | | |
| Cadmium | ND | ug/L | 5.0 | 2.5 | 1 | 08/02/13 15:00 | 08/06/13 14:51 | 7440-43-9 | |
| Calcium | **166000** | ug/L | 100 | 10.4 | 1 | 08/02/13 15:00 | 08/06/13 14:51 | 7440-70-2 | |
| Lead | **8.6** | ug/L | 5.0 | 2.4 | 1 | 08/02/13 15:00 | 08/06/13 14:51 | 7439-92-1 | B |
| Magnesium | **97000** | ug/L | 50.0 | 6.5 | 1 | 08/02/13 15:00 | 08/06/13 14:51 | 7439-95-4 | |
| Total Hardness by 2340B | **814000** | ug/L | 500 | | 1 | 08/02/13 15:00 | 08/06/13 14:51 | | |
| Zinc | **157** | ug/L | 50.0 | 3.3 | 1 | 08/02/13 15:00 | 08/06/13 14:51 | 7440-66-6 | |
| **200.7 Metals, Dissolved (LF)** | Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 | | | | | | | | |
| Cadmium, Dissolved | ND | ug/L | 5.0 | 2.5 | 1 | 08/05/13 16:30 | 08/06/13 18:12 | 7440-43-9 | |
| Lead, Dissolved | ND | ug/L | 5.0 | 2.4 | 1 | 08/05/13 16:30 | 08/06/13 18:12 | 7439-92-1 | |
| Zinc, Dissolved | **67.3** | ug/L | 50.0 | 3.3 | 1 | 08/05/13 16:30 | 08/06/13 18:12 | 7440-66-6 | |
| **2540D Total Suspended Solids** | Analytical Method: SM 2540D | | | | | | | | |
| Total Suspended Solids | ND | mg/L | 5.0 | 5.0 | 1 | | 08/05/13 08:33 | | |
| **2540F Total Settleable Solids** | Analytical Method: SM 2540F | | | | | | | | |
| Total Settleable Solids | ND | mL/L/hr | 0.20 | 0.20 | 1 | | 08/02/13 00:00 | | |
| **4500H+ pH, Electrometric** | Analytical Method: SM 4500-H+B | | | | | | | | |
| pH at 25 Degrees C | **7.5** | Std. Units | 0.10 | 0.10 | 1 | | 08/02/13 13:09 | | H3,H6 |
| **300.0 IC Anions 28 Days** | Analytical Method: EPA 300.0 | | | | | | | | |
| Sulfate | **391** | mg/L | 50.0 | 8.0 | 50 | | 08/06/13 16:12 | 14808-79-8 | |
| **5310C TOC** | Analytical Method: SM 5310C | | | | | | | | |
| Total Organic Carbon | **1.2** | mg/L | 0.50 | 0.041 | 1 | | 08/07/13 09:28 | 7440-44-0 | |



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# QUALITY CONTROL DATA

Project: BONNE TERRE (QUARTERLY)
Pace Project No.: 60150137

QC Batch: MPRP/23703 | Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 | Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60150137001

METHOD BLANK: 1230192 | Matrix: Water
Associated Lab Samples: 60150137001

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Cadmium | ug/L | ND | 5.0 | 08/06/13 14:07 | |
| Calcium | ug/L | ND | 100 | 08/06/13 14:07 | |
| Lead | ug/L | 2.7J | 5.0 | 08/06/13 14:07 | |
| Magnesium | ug/L | 6.6J | 50.0 | 08/06/13 14:07 | |
| Total Hardness by 2340B | ug/L | ND | 500 | 08/06/13 14:07 | |
| Zinc | ug/L | ND | 50.0 | 08/06/13 14:07 | |

LABORATORY CONTROL SAMPLE: 1230193

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Cadmium | ug/L | 1000 | 981 | 98 | 85-115 | |
| Calcium | ug/L | 10000 | 9980 | 100 | 85-115 | |
| Lead | ug/L | 1000 | 966 | 97 | 85-115 | |
| Magnesium | ug/L | 10000 | 9870 | 99 | 85-115 | |
| Total Hardness by 2340B | ug/L | | 65500 | | | |
| Zinc | ug/L | 1000 | 1050 | 105 | 85-115 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1230194 1230195

| Parameter | Units | 60149948002 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cadmium | ug/L | ND | 1000 | 1000 | 987 | 973 | 99 | 97 | 70-130 | 1 | 10 | |
| Calcium | ug/L | | 10000 | 10000 | 59700 | 58600 | 103 | 92 | 70-130 | 2 | 9 | |
| Lead | ug/L | ND | 1000 | 1000 | 950 | 934 | 95 | 93 | 70-130 | 2 | 10 | |
| Magnesium | ug/L | | 10000 | 10000 | 188000 | 187000 | 111 | 96 | 70-130 | 1 | 9 | |
| Total Hardness by 2340B | ug/L | 853 mg/L | | | 924000 | 915000 | | | | 1 | | |
| Zinc | ug/L | ND | 1000 | 1000 | 990 | 976 | 99 | 97 | 70-130 | 1 | 11 | |

MATRIX SPIKE SAMPLE: 1230196

| Parameter | Units | 60150139002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Cadmium | ug/L | ND | 1000 | 966 | 97 | 70-130 | |
| Calcium | ug/L | 42000 | 10000 | 51800 | 98 | 70-130 | |
| Lead | ug/L | 4.5J | 1000 | 966 | 96 | 70-130 | |
| Magnesium | ug/L | 25400 | 10000 | 36400 | 110 | 70-130 | |
| Total Hardness by 2340B | ug/L | 210000 | | 279000 | | | |
| Zinc | ug/L | 47.9J | 1000 | 1050 | 100 | 70-130 | |

## REPORT OF LABORATORY ANALYSIS

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# QUALITY CONTROL DATA

Project: BONNE TERRE (QUARTERLY)
Pace Project No.: 60150137

QC Batch: MPRP/23720 | Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 | Analysis Description: 200.7 Metals, Dissolved
Associated Lab Samples: 60150137001

METHOD BLANK: 1231216 | Matrix: Water
Associated Lab Samples: 60150137001

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Cadmium, Dissolved | ug/L | ND | 5.0 | 08/06/13 18:00 | |
| Lead, Dissolved | ug/L | ND | 5.0 | 08/06/13 18:00 | |
| Zinc, Dissolved | ug/L | 4.9J | 50.0 | 08/06/13 18:00 | |

LABORATORY CONTROL SAMPLE: 1231217

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Cadmium, Dissolved | ug/L | 1000 | 936 | 94 | 85-115 | |
| Lead, Dissolved | ug/L | 1000 | 963 | 96 | 85-115 | |
| Zinc, Dissolved | ug/L | 1000 | 1010 | 101 | 85-115 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1231218 1231219

| Parameter | Units | 60150136001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cadmium, Dissolved | ug/L | ND | 1000 | 1000 | 944 | 932 | 94 | 93 | 70-130 | 1 | 10 | |
| Lead, Dissolved | ug/L | ND | 1000 | 1000 | 947 | 930 | 95 | 93 | 70-130 | 2 | 10 | |
| Zinc, Dissolved | ug/L | 547 | 1000 | 1000 | 1510 | 1490 | 96 | 94 | 70-130 | 1 | 11 | |


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# QUALITY CONTROL DATA

Project: BONNE TERRE (QUARTERLY)
Pace Project No.: 60150137

QC Batch: WET/42711 — Analysis Method: SM 2540D
QC Batch Method: SM 2540D — Analysis Description: 2540D Total Suspended Solids
Associated Lab Samples: 60150137001

METHOD BLANK: 1230967 — Matrix: Water
Associated Lab Samples: 60150137001

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Total Suspended Solids | mg/L | ND | 5.0 | 08/05/13 08:33 | |

SAMPLE DUPLICATE: 1230968

| Parameter | Units | 60150136001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Suspended Solids | mg/L | ND | ND | | 25 | |

SAMPLE DUPLICATE: 1230969

| Parameter | Units | 60150107001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Suspended Solids | mg/L | 6.0 | 6.0 | 0 | 25 | |



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# QUALITY CONTROL DATA

Project: BONNE TERRE (QUARTERLY)
Pace Project No.: 60150137

QC Batch: WET/42688
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60150137001

SAMPLE DUPLICATE: 1230063

| Parameter | Units | 60149917001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| pH at 25 Degrees C | Std. Units | 7.8 | 7.8 | 0 | 5 | H1,H6 |



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# QUALITY CONTROL DATA

Project: BONNE TERRE (QUARTERLY)
Pace Project No.: 60150137

QC Batch: WETA/25691 — Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 — Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60150137001

METHOD BLANK: 1231399 — Matrix: Water
Associated Lab Samples: 60150137001

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Sulfate | mg/L | ND | 1.0 | 08/06/13 10:20 | |

LABORATORY CONTROL SAMPLE: 1231400

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Sulfate | mg/L | 5 | 5.0 | 99 | 90-110 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1231401 — 1231402

| Parameter | Units | 60149422001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | mg/L | 15.9 | 10 | 10 | 28.6 | 28.9 | 126 | 129 | 61-119 | 1 | 10 | M1 |

MATRIX SPIKE SAMPLE: 1231404

| Parameter | Units | 60150075002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Sulfate | mg/L | 28.5 | 50 | 82.2 | 107 | 61-119 | |



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# QUALITY CONTROL DATA

Project: BONNE TERRE (QUARTERLY)
Pace Project No.: 60150137

QC Batch: WETA/18827
QC Batch Method: SM 5310C
Analysis Method: SM 5310C
Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60150137001

METHOD BLANK: 833384
Matrix: Water
Associated Lab Samples: 60150137001

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Total Organic Carbon | mg/L | ND | 0.50 | 08/07/13 10:22 | |

LABORATORY CONTROL SAMPLE: 833385

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Total Organic Carbon | mg/L | 2.5 | 2.6 | 102 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 833386 833387

| Parameter | Units | 4082116001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | mg/L | 2.1 | 7.5 | 7.5 | 10.2 | 10.2 | 108 | 107 | 80-120 | 1 | 20 | |



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# QUALIFIERS

Project: BONNE TERRE (QUARTERLY)
Pace Project No.: 60150137

## DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.
ND - Not Detected at or above adjusted reporting limit.
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PRL - Pace Reporting Limit.
RL - Reporting Limit.
S - Surrogate
1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

## LABORATORIES

| | |
|---|---|
| PASI-G | Pace Analytical Services - Green Bay |
| PASI-K | Pace Analytical Services - Kansas City |

## ANALYTE QUALIFIERS

| | |
|---|---|
| B | Analyte was detected in the associated method blank. |
| H1 | Analysis conducted outside the EPA method holding time. |
| H3 | Sample was received or analysis requested beyond the recognized method holding time. |
| H6 | Analysis initiated outside of the 15 minute EPA recommended holding time. |
| M1 | Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery. |


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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: BONNE TERRE (QUARTERLY)
Pace Project No.: 60150137

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| 60150137001 | BTE 3RD QTR-2013 | EPA 200.7 | MPRP/23703 | EPA 200.7 | ICP/18596 |
| 60150137001 | BTE 3RD QTR-2013 | EPA 200.7 | MPRP/23720 | EPA 200.7 | ICP/18609 |
| 60150137001 | BTE 3RD QTR-2013 | SM 2540D | WET/42711 | | |
| 60150137001 | BTE 3RD QTR-2013 | SM 2540F | WET/42685 | | |
| 60150137001 | BTE 3RD QTR-2013 | SM 4500-H+B | WET/42688 | | |
| 60150137001 | BTE 3RD QTR-2013 | EPA 300.0 | WETA/25691 | | |
| 60150137001 | BTE 3RD QTR-2013 | SM 5310C | WETA/18827 | | |



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Sample Condition Upon Receipt

WO#: 60150137

60150137

**Client Name:** DRC

Optional
Proj Due Date:
Proj Name:

**Courier:** Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other USA

**Tracking #:** _____ . Pace Shipping Label Used? Yes ☐ No ☑

**Custody Seal on Cooler/Box Present:** Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

**Packing Material:** Bubble Wrap ☑ Bubble Bags ☐ Foam ☐ None ☐ Other Traffic

**Thermometer Used:** T-112 / T-194 **Type of Ice:** Wet Blue None ☐ Samples received on ice, cooling process has begun
(circle one)

**Cooler Temperature:** 2.1

Date and initials of person examining contents: PVB 8-2-13

Temperature should be above freezing to 6°C

| | | | |
|---|---|---|---|
| Chain of Custody present: | ☑Yes ☐No ☐N/A | 1. | |
| Chain of Custody filled out: | ☑Yes ☐No ☐N/A | 2. | |
| Chain of Custody relinquished: | ☑Yes ☐No ☐N/A | 3. | |
| Sampler name & signature on COC: | ☑Yes ☐No ☐N/A | 4. | |
| Samples arrived within holding time: | ☑Yes ☐No ☐N/A | 5. | |
| Short Hold Time analyses (<72hr): | ☑Yes ☐No ☐N/A | 6. S.S. pH | |
| Rush Turn Around Time requested: PVB 8-2-13 | ☑Yes ☑No ☐N/A | 7. 3Day | |
| Sufficient volume: | ☑Yes ☐No ☐N/A | 8. | |
| Correct containers used: | ☑Yes ☐No ☐N/A | | |
| Pace containers used: | ☑Yes ☐No ☐N/A | 9. bid not received volume for TOC. | |
| Containers intact: | ☑Yes ☐No ☐N/A | 10. | |
| Unpreserved 5035A soils frozen w/in 48hrs? | ☐Yes ☐No ☑N/A | 11. | |
| Filtered volume received for dissolved tests? | ☐Yes ☐No ☑N/A | 12. | |
| Sample labels match COC: Includes date/time/ID/analyses Matrix: WT | ☑Yes ☐No ☐N/A | 13. | |
| All containers needing preservation have been checked. | ☑Yes ☐No ☐N/A | | |
| All containers needing preservation are found to be in compliance with EPA recommendation. | ☑Yes ☐No ☐N/A | 14. | |
| Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics | ☐Yes ☑No | Initial when completed | Lot # of added preservative |
| Trip Blank present: | ☐Yes ☐No ☑N/A | | |
| Pace Trip Blank lot # (if purchased): | | 15. | |
| Headspace in VOA vials ( >6mm): | ☐Yes ☐No ☑N/A | 16. | |
| Project sampled in USDA Regulated Area: | ☐Yes ☐No ☑N/A | 17. List State: | |

**Client Notification/ Resolution:** Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Jim Check 8/2/13 Date: _____

Pace Analytical
www.pacelabs.com

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.



**Section A**
**Required** Client Information:

| | |
|---|---|
| Company: | The Doe Run Company |
| Address: | PO Box 500 |
| | Viburnum, MO 65566 |
| Email To: | asanders@doerun.com |
| Phone: 573-689-4535 | Fax: 573-244-8179 |
| Requested Due Date/TAT: | ~~5-7 Days~~ 30 Day |

**Section B**
**Required** Project Information:

| | |
|---|---|
| Report To: | Amy Sanders |
| Copy To: | |
| Purchase Order No.: | |
| Project Name: | Bonne Terre (Quarterly) |
| Project Number: | |

**Section C**
Invoice Information:

| | |
|---|---|
| Attention: | Amy Sanders |
| Company Name: | The Doe Run Company |
| Address: | PO Box 500, Viburnum, MO 65566 |
| Pace Quote Reference: | |
| Pace Project Manager: | Jamie Church |
| Pace Profile #: | |

**REGULATORY AGENCY**
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☒ OTHER

Site Location STATE: MO

**Section D**
**Required** Client Information

**Valid Matrix Codes**

| MATRIX | CODE |
|---|---|
| DRINKING WATER | DW |
| WATER | WT |
| WASTE WATER | WW |
| PRODUCT | P |
| SOIL/SOLID | SL |
| OIL | OL |
| | WP |
| | AR |
| | OT |
| | TS |

**SAMPLE ID**
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

| ITEM # | SAMPLE ID | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED Composite Start Date | Composite Start Time | Composite End/Grab Date | Composite End/Grab Time | SAMPLE TEMP AT COLLECTION | # OF CONTAINERS | Preservatives: Unpreserved | $H_2SO_4$ | $HNO_3$ | HCl | NaOH | $Na_2S_2O_3$ | Methanol | Other | Analysis Test Y/N | TSS | Sulfate | Settleable Solids | TOC | Cd, Pb, Zn (T&D) | Hardness | pH | | | | | Residual Chlorine (Y/N) | Pace Project No./ Lab I.D. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | N | N | N | N | N | N | N | | | | | | 60150137 |
| 1 | BTE 3rd QTR-2013 | W | G | | | 07/31/13 | 2019 | 67 | 4 | 2 | 1 | 1 | | | | | | | X | X | X | X | X | X | X | | | | | N | 1B0LU 1B03U 1B03W5 01 |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| ADDITIONAL COMMENTS | RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|---|
| * 200.7 Total and Dissolved Metals (Lab Filter for dissolved) | Amy Sanders | 7/31/13 | 1530 | PLASE | 8-2-13 | ~~0515~~ 0610 |
| **analyzed within 24 hours with flagged data | | | | | | |

| SAMPLE CONDITIONS | | | |
|---|---|---|---|
| Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N) |
| 2.1 | Y | Y | Y |

**SAMPLER NAME AND SIGNATURE**
PRINT Name of SAMPLER: Amber Nipper Amy Sanders
SIGNATURE of SAMPLER: Amy Sanders
DATE Signed (MM/DD/YY): 7/31/13

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

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(913)599-5665

October 21, 2013

Amy Sanders
The Doe Run Company
P. O. Box 500
Viburnum, MO 65566

RE: Project: A0C (BONNE TERRE)
Pace Project No.: 60155241

Dear Amy Sanders:
Enclosed are the analytical results for sample(s) received by the laboratory on October 11, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jamie Church

jamie.church@pacelabs.com
Project Manager

Enclosures

**REPORT OF LABORATORY ANALYSIS**

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# CERTIFICATIONS

Project: A0C (BONNE TERRE)
Pace Project No.: 60155241

**Kansas Certification IDs**
9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 13-012-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-13-4
Utah Certification #: KS000212013-3
Illinois Certification #: 003097

**Dallas Certification IDs**
400 West Bethany Dr Suite 190 75013 Allen TX 75013
Texas Certification #: T104704232-13-5
Kansas Certification #: E-10388
Arkansas Certification #: 88-0647
Oklahoma Certification #: 2012-080
Louisiana Certification #: 02007



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## SAMPLE SUMMARY

Project: A0C (BONNE TERRE)
Pace Project No.: 60155241

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| 60155241001 | 10841/BTE | Water | 10/10/13 13:24 | 10/11/13 08:40 |



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## SAMPLE ANALYTE COUNT

Project: A0C (BONNE TERRE)
Pace Project No.: 60155241

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| 60155241001 | 10841/BTE | EPA 200.7 | SMW | 3 | PASI-K |
| | | EPA 200.8 | JGP | 3 | PASI-K |
| | | EPA 200.8 | JGP | 3 | PASI-K |
| | | SM 2540D | RAH | 1 | PASI-K |
| | | SM 2540F | RAH | 1 | PASI-K |
| | | SM 4500-H+B | JML | 1 | PASI-K |
| | | EPA 300.0 | OL | 1 | PASI-K |
| | | SM 5310C | MCP | 1 | PASI-D |



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# ANALYTICAL RESULTS

Project: A0C (BONNE TERRE)
Pace Project No.: 60155241

**Sample: 10841/BTE** **Lab ID: 60155241001** Collected: 10/10/13 13:24 Received: 10/11/13 08:40 Matrix: Water

| Parameters | Results | Units | Report Limit | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **200.7 Metals, Total** | Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 | | | | | | | | |
| Calcium | **165000** | ug/L | 100 | 10.4 | 1 | 10/14/13 15:50 | 10/16/13 17:44 | 7440-70-2 | |
| Magnesium | **99000** | ug/L | 50.0 | 6.5 | 1 | 10/14/13 15:50 | 10/16/13 17:44 | 7439-95-4 | |
| Total Hardness by 2340B | **820000** | ug/L | 500 | | 1 | 10/14/13 15:50 | 10/16/13 17:44 | | |
| **200.8 MET ICPMS** | Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 | | | | | | | | |
| Cadmium | **0.19J** | ug/L | 0.50 | 0.050 | 1 | 10/16/13 11:00 | 10/17/13 14:24 | 7440-43-9 | |
| Lead | **2.7** | ug/L | 1.0 | 0.030 | 1 | 10/16/13 11:00 | 10/17/13 14:24 | 7439-92-1 | |
| Zinc | **122** | ug/L | 10.0 | 1.0 | 1 | 10/16/13 11:00 | 10/17/13 14:24 | 7440-66-6 | |
| **200.8 ICPMS, Dissolved (LF)** | Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 | | | | | | | | |
| Cadmium, Dissolved | **0.16J** | ug/L | 0.50 | 0.050 | 1 | 10/14/13 20:30 | 10/16/13 15:45 | 7440-43-9 | |
| Lead, Dissolved | **0.40J** | ug/L | 1.0 | 0.030 | 1 | 10/14/13 20:30 | 10/16/13 15:45 | 7439-92-1 | |
| Zinc, Dissolved | **103** | ug/L | 10.0 | 1.0 | 1 | 10/14/13 20:30 | 10/16/13 15:45 | 7440-66-6 | |
| **2540D Total Suspended Solids** | Analytical Method: SM 2540D | | | | | | | | |
| Total Suspended Solids | ND | mg/L | 5.0 | 5.0 | 1 | | 10/16/13 11:39 | | |
| **2540F Total Settleable Solids** | Analytical Method: SM 2540F | | | | | | | | |
| Total Settleable Solids | ND | mL/L/hr | 0.20 | 0.20 | 1 | | 10/11/13 12:35 | | |
| **4500H+ pH, Electrometric** | Analytical Method: SM 4500-H+B | | | | | | | | |
| pH at 25 Degrees C | **7.3** | Std. Units | 0.10 | 0.10 | 1 | | 10/12/13 09:00 | | H6 |
| **300.0 IC Anions 28 Days** | Analytical Method: EPA 300.0 | | | | | | | | |
| Sulfate | **414** | mg/L | 50.0 | 8.0 | 50 | | 10/18/13 11:07 | 14808-79-8 | |
| **5310C TOC** | Analytical Method: SM 5310C | | | | | | | | |
| Total Organic Carbon | **0.98** | mg/L | 0.50 | 0.25 | 1 | | 10/15/13 13:27 | 7440-44-0 | |



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# QUALITY CONTROL DATA

Project: A0C (BONNE TERRE)
Pace Project No.: 60155241

QC Batch: MPRP/24716 | Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 | Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60155241001

METHOD BLANK: 1271673 | Matrix: Water
Associated Lab Samples: 60155241001

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Calcium | ug/L | ND | 100 | 10/16/13 16:23 | |
| Magnesium | ug/L | ND | 50.0 | 10/16/13 16:23 | |
| Total Hardness by 2340B | ug/L | ND | 500 | 10/16/13 16:23 | |

LABORATORY CONTROL SAMPLE: 1271674

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Calcium | ug/L | 10000 | 9940 | 99 | 85-115 | |
| Magnesium | ug/L | 10000 | 9760 | 98 | 85-115 | |
| Total Hardness by 2340B | ug/L | | 65000 | | | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1271675 1271676

| Parameter | Units | 60155085001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | ug/L | | 10000 | 10000 | 166000 | 163000 | 128 | 92 | 70-130 | 2 | 9 | |
| Magnesium | ug/L | | 10000 | 10000 | 20600 | 20100 | 100 | 95 | 70-130 | 3 | 9 | |
| Total Hardness by 2340B | ug/L | 427000 | | | 500000 | 489000 | | | | 2 | | |

MATRIX SPIKE SAMPLE: 1271677

| Parameter | Units | 60155118002 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Calcium | ug/L | 31.2 mg/L | 10000 | 41900 | 106 | 70-130 | |
| Magnesium | ug/L | 3.2 mg/L | 10000 | 13000 | 98 | 70-130 | |
| Total Hardness by 2340B | ug/L | 91.1 mg/L | | 158000 | | | |



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# QUALITY CONTROL DATA

Project: A0C (BONNE TERRE)
Pace Project No.: 60155241

QC Batch: MPRP/24708
QC Batch Method: EPA 200.8
Analysis Method: EPA 200.8
Analysis Description: 200.8 MET
Associated Lab Samples: 60155241001

METHOD BLANK: 1271551
Matrix: Water
Associated Lab Samples: 60155241001

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Cadmium | ug/L | ND | 0.50 | 10/17/13 13:25 | |
| Lead | ug/L | ND | 1.0 | 10/17/13 13:25 | |
| Zinc | ug/L | 1.1J | 10.0 | 10/17/13 13:25 | |

LABORATORY CONTROL SAMPLE: 1271552

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Cadmium | ug/L | 40 | 40.5 | 101 | 85-115 | |
| Lead | ug/L | 40 | 37.5 | 94 | 85-115 | |
| Zinc | ug/L | 100 | 105 | 105 | 85-115 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1271553 1271554

| Parameter | Units | 60155238001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cadmium | ug/L | 0.067J | 40 | 40 | 38.6 | 39.6 | 96 | 99 | 70-130 | 2 | 20 | |
| Lead | ug/L | 1.9 | 40 | 40 | 39.0 | 39.7 | 93 | 95 | 70-130 | 2 | 20 | |
| Zinc | ug/L | 133 | 100 | 100 | 228 | 228 | 95 | 95 | 70-130 | 0 | 20 | |



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# QUALITY CONTROL DATA

Project: A0C (BONNE TERRE)
Pace Project No.: 60155241

QC Batch: MPRP/24733 | Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 | Analysis Description: 200.8 MET Dissolved
Associated Lab Samples: 60155241001

METHOD BLANK: 1271842 | Matrix: Water
Associated Lab Samples: 60155241001

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Cadmium, Dissolved | ug/L | ND | 0.50 | 10/16/13 15:37 | |
| Lead, Dissolved | ug/L | ND | 1.0 | 10/16/13 15:37 | |
| Zinc, Dissolved | ug/L | ND | 10.0 | 10/16/13 15:37 | |

LABORATORY CONTROL SAMPLE: 1271843

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Cadmium, Dissolved | ug/L | 40 | 41.4 | 103 | 85-115 | |
| Lead, Dissolved | ug/L | 40 | 40.0 | 100 | 85-115 | |
| Zinc, Dissolved | ug/L | 100 | 112 | 112 | 85-115 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1271844 1271845

| Parameter | Units | 60155241001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cadmium, Dissolved | ug/L | 0.16J | 40 | 40 | 39.8 | 38.9 | 99 | 97 | 70-130 | 2 | 20 | |
| Lead, Dissolved | ug/L | 0.40J | 40 | 40 | 41.6 | 41.0 | 103 | 102 | 70-130 | 2 | 20 | |
| Zinc, Dissolved | ug/L | 103 | 100 | 100 | 200 | 200 | 97 | 97 | 70-130 | 0 | 20 | |



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# QUALITY CONTROL DATA

Project: A0C (BONNE TERRE)
Pace Project No.: 60155241

QC Batch: WET/44046
QC Batch Method: SM 2540D
Analysis Method: SM 2540D
Analysis Description: 2540D Total Suspended Solids
Associated Lab Samples: 60155241001

METHOD BLANK: 1272788
Matrix: Water
Associated Lab Samples: 60155241001

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Total Suspended Solids | mg/L | ND | 5.0 | 10/16/13 11:33 | |

SAMPLE DUPLICATE: 1272789

| Parameter | Units | 5088294001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Suspended Solids | mg/L | 31.7 | 25.0 | 24 | 25 | |

SAMPLE DUPLICATE: 1272790

| Parameter | Units | 60155238002 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Total Suspended Solids | mg/L | ND | ND | | 25 | |



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# QUALITY CONTROL DATA

Project: A0C (BONNE TERRE)
Pace Project No.: 60155241

QC Batch: WET/43972
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60155241001

SAMPLE DUPLICATE: 1270735

| Parameter | Units | 60155222001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| pH at 25 Degrees C | Std. Units | 5.5 | 5.5 | 0 | 5 | H6 |



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# QUALITY CONTROL DATA

Project: A0C (BONNE TERRE)
Pace Project No.: 60155241

QC Batch: WETA/26699
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60155241001

METHOD BLANK: 1274375
Matrix: Water
Associated Lab Samples: 60155241001

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Sulfate | mg/L | ND | 1.0 | 10/18/13 08:57 | |

LABORATORY CONTROL SAMPLE: 1274376

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Sulfate | mg/L | 5 | 5.0 | 100 | 90-110 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1273041 1273042

| Parameter | Units | 60155239001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | mg/L | 521 | 250 | 250 | 697 | 738 | 70 | 87 | 80-120 | 6 | 15 | M1 |



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# QUALITY CONTROL DATA

Project: A0C (BONNE TERRE)
Pace Project No.: 60155241

QC Batch: WETA/3300
QC Batch Method: SM 5310C
Analysis Method: SM 5310C
Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 60155241001

METHOD BLANK: 45170
Matrix: Water
Associated Lab Samples: 60155241001

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|
| Total Organic Carbon | mg/L | ND | 0.50 | 10/15/13 12:56 | |

LABORATORY CONTROL SAMPLE: 45171

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Total Organic Carbon | mg/L | 10 | 10.0 | 100 | 90-110 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 45172 45173

| Parameter | Units | 60155241001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | mg/L | 0.98 | 10.1 | 10.1 | 11.1 | 10.8 | 100 | 97 | 80-120 | 3 | 20 | |



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# QUALIFIERS

Project: A0C (BONNE TERRE)
Pace Project No.: 60155241

## DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

## LABORATORIES

| | |
|---|---|
| PASI-D | Pace Analytical Services - Dallas |
| PASI-K | Pace Analytical Services - Kansas City |

## ANALYTE QUALIFIERS

| | |
|---|---|
| H6 | Analysis initiated outside of the 15 minute EPA recommended holding time. |
| M1 | Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery. |



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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: A0C (BONNE TERRE)
Pace Project No.: 60155241

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| 60155241001 | 10841/BTE | EPA 200.7 | MPRP/24716 | EPA 200.7 | ICP/19207 |
| 60155241001 | 10841/BTE | EPA 200.8 | MPRP/24708 | EPA 200.8 | ICPM/2572 |
| 60155241001 | 10841/BTE | EPA 200.8 | MPRP/24733 | EPA 200.8 | ICPM/2570 |
| 60155241001 | 10841/BTE | SM 2540D | WET/44046 | | |
| 60155241001 | 10841/BTE | SM 2540F | WET/43960 | | |
| 60155241001 | 10841/BTE | SM 4500-H+B | WET/43972 | | |
| 60155241001 | 10841/BTE | EPA 300.0 | WETA/26699 | | |
| 60155241001 | 10841/BTE | SM 5310C | WETA/3300 | | |



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## Sample Condition Upon Receipt

WO#: 60155241

60155241

| Optional |
|---|
| Proj Due Date: |
| Proj Name: |

**Client Name:** Doe Run

**Courier:** Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☐

**Tracking #:** 7968 8060 1957 Pace Shipping Label Used? Yes ☐ No ☒

**Custody Seal on Cooler/Box Present:** Yes ☒ No ☒ Seals intact: Yes ☒ No ☒

**Packing Material:** Bubble Wrap ☒ Bubble Bags ☐ Foam ☐ None ☐ Other ☐

**Thermometer Used:** T-192 / T-194 **Type of Ice:** Wet Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

**Cooler Temperature:** 2.3, 0.9

Temperature should be above freezing to 6°C

**Date and initials of person examining contents:** JM 10/10/13 930

| | | | |
|---|---|---|---|
| Chain of Custody present: | ☒Yes ☐No ☐N/A | 1. | |
| Chain of Custody filled out: | ☒Yes ☐No ☐N/A | 2. | |
| Chain of Custody relinquished: | ☒Yes ☐No ☐N/A | 3. | |
| Sampler name & signature on COC: | ☒Yes ☐No ☐N/A | 4. | |
| Samples arrived within holding time: | ☒Yes ☐No ☐N/A | 5. | |
| **Short Hold Time analyses (<72hr):** | ☒Yes ☒No ☐N/A | 6. | Soil. Sol. |
| **Rush Turn Around Time requested:** | ☐Yes ☒No ☐N/A | 7. | |
| Sufficient volume: | ☒Yes ☐No ☐N/A | 8. | |
| Correct containers used: | ☒Yes ☐No ☐N/A | | |
| Pace containers used: | ☒Yes ☐No ☐N/A | 9. | |
| Containers intact: | ☒Yes ☐No ☐N/A | 10. | |
| Unpreserved 5035A soils frozen w/in 48hrs? | ☐Yes ☐No ☒N/A | 11. | |
| Filtered volume received for dissolved tests? | ☐Yes ☐No ☒N/A | 12. | |
| Sample labels match COC: Includes date/time/ID/analyses Matrix: water | ☒Yes ☐No ☐N/A | 13. | |
| All containers needing preservation have been checked. | ☐Yes ☐No ☒N/A | | |
| All containers needing preservation are found to be in compliance with EPA recommendation. | ☐Yes ☐No ☒N/A | 14. | |
| Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics | ☒Yes ☐No | Initial when completed: N/A | Lot # of added preservative |
| Trip Blank present: Pace Trip Blank lot # (if purchased): N/A | ☐Yes ☐No ☒N/A | 15. | |
| Headspace in VOA vials ( >6mm): | ☐Yes ☐No ☒N/A | 16. | |
| Project sampled in USDA Regulated Area: | ☐Yes ☐No ☒N/A | 17. List State: | |

**Client Notification/ Resolution:** Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Jami Church 10/11/13

Project Manager R... _____ Date _____

# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

THE DOE RUN COMPANY

**Section A** — Required Client Information:

| | |
|---|---|
| Company: | The Doe Run Company |
| Address: | PO Box 500 |
| Email To: | asanders@doerun.com |
| Phone: | (573) 689-4535 |
| Fax: | (573) 244-8179 |
| Requested Due Date/TAT: | 5 To 7 Days |

**Section B** — Required Project Information:

| | |
|---|---|
| Report To: | Amy Sanders |
| Copy To: | |
| Purchase Order No.: | |
| Project Name: | AOC (Bonne Terre) |
| Project Number: | |

**Section C** — Invoice Information:

| | |
|---|---|
| Attention: | Amy Sanders |
| Company Name: | The Doe Run Company |
| Address: | PO Box 500, Viburnum, MO 65566 |
| Pace Quote Reference | |
| Pace Project Manager | |
| Pace Profile # | |

REGULATORY AGENCY: NPDES, GROUND WATER, UST, RCRA

Site Location STATE: MO

Page: 1 of 1

COC#: 178

60155241

Requested Analysis Filtered (Y/N)

Section C — Required Sample Information

Valid Matrix Codes: MATRIX (WATER, WASTE WATER, SOIL/SOLID) — CODE (WT, WW, SL)

| ITEM # | SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COMPOSITE START DATE (mm/dd/yy) | COMPOSITE START TIME (Military) | COMPOSITE END / GRAB DATE (mm/dd/yy) | COMPOSITE END / GRAB TIME (Military) | SAMPLE TEMP AT COLLECTION | Total # OF CONTAINERS | 250 mL Unpreserved | 500 mL Unpreserved | 1 L Unpreserved | 250 mL Nitric | 250 mL Amber Glass $H_2SO_4$ | 250 mL Plastic $H_2SO_4$ | 1000 mL Amber HCL | 250 mL ZnAc/NaOH | 500 mL Amber Glass $H_2SO_4$ | *See Additional Comments Below — Analysis Test | SEMO Lab Project No. / Lab I.D. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10841 | WW | G | | | 10/10/13 | 1324 | | 4 | | 1 | 1 | 1 | 1 | | | | | CD-D, PB-D, ZN-D, HARD, PH, SO4, SS, TOC, TSS, CD-T | BTE |
| 2 | | | | | | | | | | | | | | | | | | | PB-T, ZN-T | |
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ADDITIONAL COMMENTS

| RELINQUISHED BY / AFFILIATION | DATE | TIME (Military) | ACCEPTED BY / AFFILIATION | DATE | TIME (Military) |
|---|---|---|---|---|---|
| Amber Nipper | 10/10/13 | 1400 | [illegible] | 10/10/13 | 840 |

SAMPLE CONDITIONS: Temp in °C: 0.7; pH in SU: Y; Received on Ice (Y/N): N; Custody Sealed Cooler (Y/N): Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Amber Nipper

SIGNATURE of SAMPLER: Amber Nipper

DATE Signed (MM/DD/YY): 10/10/13